UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,673	04/24/2001	John S. Houston	POU920010030US1	6495

7590 04/21/2004

Floyd A. Gonzalez
IBM Corporation
Intellectual Property Law
2455 South Road, P386
Poughkeepsie, NY 12601

EXAMINER	
SHAPIRO, LEONID	

ART UNIT	PAPER NUMBER
2673	

DATE MAILED: 04/21/2004

15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/841,673	HOUSTON, JOHN S.	
	Examiner	Art Unit	
	Leonid Shapiro	2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 8-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6, 8-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1, 10 and 20 are provisionally rejected under the judicially created doctrine of double patenting over claim 1 of copending Application No. 09/841 626. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: "a controller for converting the output of the circuit matrix for the contacted key to one which recognizable by the computer so that (scan code) output(s) of the keyboard provided to the standard interface connector correctly identifies the contacted keys character or function to the computer irrespective of the position of the key on keyboard".

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending

application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5, 9-14, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Willner (US Patent No. 5, 790, 103) in view of Boldridge et al. (US Patent No. 4, 712, 092) and Fukui (JP 61-221922 A).

As to claim 1, Willner teaches an entry device (See Fig. 1D, Item 100, Col. 6, Lines 57-66) comprising: a keyboard having a plurality of multifunction key positions (See Figs. 1B and 1C, items 234, 236, 238, 240, 242, Col. 8, Lines 57-60).

Willner does not show a plurality of keys each key representing a character or function and containing a multi-bit binary code therein identifying the character or function, keys being responsive to user contact to the keycaps; a circuit matrix disposed below keyboard, circuit matrix being capable detecting the binary code when one of the keys is contacted to produce an electrical signal representative of the binary code associated with the contacted key; a standard interface connector to connect the keyboard to a computer; a controller for converting the output of the circuit matrix for the contacted key to one which is recognizable by the computer so that the output of the keyboard provides to the standard interface connector correctly,

identifies the contacted keys character or function to the computer irrespectively of the position of the key on the keyboard.

Boldridge et al. teaches a plurality of keys each key representing a character or function and containing a multi-bit binary code therein identifying the character or function, keys being responsive to user contact to the keycaps (See Fig. 1,7, items 30-33, in description See Col. 7, Lines 62-68); a circuit matrix disposed below keyboard, circuit matrix being capable detecting the binary code when one of the keys is contacted to produce an electrical signal representative of the binary code associated with the contacted key (See Fig. 1,7, items 30-33, in description See Col. 7, Lines 62-68 and Fig. 9, item 41, in description See from Col. 9, Line 60 to Col. 10, Line 2); a standard interface connector to connect the keyboard to a computer (See Fig. 9B, item SERIAL DATA OUT, in description See from Col. 9, Line 60 to Col. 10, Line 2); a controller for converting the output of the circuit matrix for the contacted key to one which is recognizable by the computer so that the output of the keyboard provides to the standard interface connector correctly, identifies the contacted keys character or function to the computer irrespectively of the position of the key on the keyboard (See Fig. 1,7, items 30-33, in description See Col. 7, Lines 62-68 and Fig. 9, item 41, in description See from Col. 9, Line 60 to Col. 10, Line 2).

It would have been obvious to one of ordinary skill in the art at the time of invention to implement plurality of keys as shown by Boldridge et al. in the Willner apparatus in order to obtain an improved keyboard assembly (See Col. 1, Lines 9-10 in Boldridge et al. reference).

Willner and Boldridge et al. do not show each key containing an inscription on the keycap representing a character or function and keys being capable of being positioned in any of the key positions in the keyboard.

Fukui teaches to change each key top (See Drawing 1, item 1) and to generate key code correspondent to any position in the keyboard (See Drawing 1, item 1).

It would have been obvious to one of ordinary skill in the art at the time of invention to change an inscription on the keycap and position a key to any key location as shown by Fukui in the Boldridge et al. apparatus in order to obtain a desired keyboard system (See Abstract in the Fukui reference).

As to claim 10, Willner teaches an entry device (See Fig. 1D, Item 100, Col. 6, Lines 57-66) for disabled comprising: a keyboard having a plurality of multifunction key positions (See Figs. 1B and 1C, items 234, 236, 238, 240, 242, Col. 8, Lines 57-60).

Willner does not show a set of movable keys, each key of the set containing a character or function and containing a multi-bit binary code therein identifying the character or function of the particular key, keys being responsive to user contact to the keycaps, keys being capable of being positioned in any one of the key positions in the keyboard; a circuit matrix disposed below and in a fixed relationship to keyboard keyboard, circuit matrix being capable detecting the binary code when one of the keys is contacted to produce an electrical signal representative of the binary code associated with the contacted key; a standard interface connector to connect the keyboard to a computer; a controller for converting the output of the circuit matrix for the contacted key to one which is recognizable by the computer so that the output of the keyboard provides to the standard interface connector correctly, identifies the contacted keys character or

function to the computer irrespectively of the position of the key on the keyboard in accordance with users disability.

Boldridge et al. teaches a plurality of keys each key representing a character or function and containing a multi-bit binary code therein identifying the character or function, keys being responsive to user contact to the keycaps (See Fig. 1,7, items 30-33, in description See Col. 7, Lines 62-68); a circuit matrix disposed below and in fixed relationship to keyboard, circuit matrix having detection positions for each of plurality of keys which detection positions are each capable of detecting the binary code of the keys is contacted to produce an electrical signal representative of the binary code associated with the contacted key (See Fig. 1,7, items 30-33, in description See Col. 7, Lines 62-68 and Fig. 9, item 41, in description See from Col. 9, Line 60 to Col. 10, Line 2); a standard interface connector to connect the keyboard to a computer (See Fig. 9B, item SERIAL DATA OUT, in description See from Col. 9, Line 60 to Col. 10, Line 2); a controller for converting the output of the circuit matrix for the contacted key to one which is recognizable by the computer so that the output of the keyboard provides to the standard interface connector correctly, identifies the contacted keys character or function to the computer irrespectively of the position of the key on the keyboard so the key can be moved to configure the keys on the keyboard in accordance with user disability (See Fig. 1,7, items 30-33, in description See Col. 7, Lines 62-68 and Fig. 9, item 41, in description See from Col. 9, Line 60 to Col. 10, Line 2).

It would have been obvious to one of ordinary skill in the art at the time of invention to implement plurality of keys as shown by Boldridge et al. in the Willner apparatus in order to obtain an improved keyboard assembly (See Col. 1, Lines 9-10 in Boldridge et al. reference).

Willner and Boldridge et al. do not show each key containing an inscription on the keycap representing a character or function and keys being capable of being positioned in any of the key positions in the keyboard.

Fukui teaches to change each key top (See Drawing 1, item 1) and to generate key code correspondent to any position in the keyboard (See Drawing 1, item 1).

It would have been obvious to one of ordinary skill in the art at the time of invention to change an inscription on the keycap and position a key to any key location as shown by Fukui in the Boldridge et al. apparatus in order to obtain a desired keyboard system (See Abstract in the Fukui reference).

As to claims 2,11, Boldridge et al. teaches the controller with a look-up table responsive to the multi-bit output of the circuit matrix the multi-bit codes for each of the keys to provide a standard code signal recognizable by a any computer compatible with the interface connector (binary address of PROM translates to a desired ASCII code for the respective depressed key) (See Fig. 1,7, 9A, items 41, 30-33, in description See Col. 7, Lines 62-68 and Fig. 9, item 41, in description See from Col. 9, Line 60 to Col. 10, Line 2).

As to claims 3,12,18 Boldridge et al. teaches the keys have in the base of the key a plurality of locations each representing one digit in the multi-bit binary code to identify them distinctively from the other keys in accordance with multi-bit binary code (See Fig. 6-7, items 30-35, in description See Col. 7, Lines 62-66).

Boldridge et al. does not teaches one or more pins each positioned one of the locations so that the keys all contain a different combination of location with posts and without posts. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the

encoding in the in the Boldridge et al. apparatus to use one or more pins each positioned one of the locations so that the keys all contain a different combination of location with posts and without posts.

As to claims 4,13, Boldridge et al. teaches the keys have a circuit embedded therein storing the multi-bit binary code identifying each key distinctively from the other keys and have electrical contacts providing excitation to the circuit and connecting it to the matrix to provide a multi-bit code signal to the controller to **identify** the key (See Fig. 6-8, 9, items 30-35, 41, 62, in description See Col. 7, Lines 62-68).

As to claims 5,14, Boldridge et al. teaches the circuit matrix provides the bits of the multi-bit binary code to the controller in **parallel** (See Fig. 6-8, 9, items 30-35, 41, 62, in description See Col. 2, Lines 28-35 and Col. 7, Lines 62-68).

As to claims 9,17,19 Taylor teaches the keyboard has openings to accept the keys (See Fig. 1, item 14, in description see Col. 2, Lines 29-41), the keys are spring loaded with arms with feet that hold the keys in position and are flexible to enable removal of the key from the keyboard to permit selective placement of the keys in desired keyboard location (See Figs. 1-2,5, items 18,5456,78, in description See Col. 2, Lines 29-41 and Col. 3, Lines 3-15), and Boldridge et al. teaches the multi-bit code stored therein to the circuit matrix (See Fig. 1, items 30-33, in description See Col. 7, Lines 62-68).

3. Claims 6,15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boldridge et al., Willner and Fukui as aforementioned in claims 4,12 in view of Alexander (US Patent No. 3, 706, 905).

Boldridge et al., Willner and Fukui do not teach the circuit matrix provides the bits of the multi-bit binary code to the controller serially.

Alexander teaches to transmit a serial binary code as each key is depressed (See fig. 1, items12-13, in description see Col.2, Lines 3-5).

It would have been obvious to one of ordinary skill in the art at the time of invention to use Alexander approach in the Boldridge et al., Willner and Fukui apparatus.

4. Claims 8,16 rejected under 35 U.S.C. 103(a) as being unpatentable over Boldridge et al., Willner and Fukui as aforementioned in claims 7, 11 in view of Cherry (US Patent No. 4,529,848).

Boldridge et al. ,Willner and Fukui do not teach the circuit matrix contains a plurality of capacitive switches each switch responsive to one of the pins to generate a key make signal.

Cherry teaches the circuit matrix contains a plurality of capacitive switches each switch responsive to generate a key signal (See Fig. 3, items 37-39, in description See Col. 4, Lines 36-43).

It would have been obvious to one of ordinary skill in the art at the time of invention to use Cherry approach in the Willner, Boldridge et al. and Fukui apparatus in order to provide a capacitive switch with an overtravel operation (See Col. 1, Lines 48-49 in the Cherry reference).

5. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Willner, Boldridge et al., Fukui and Cherry as applied to claim 8 above, and further in view of Taylor (Patent No. 3, 765,014).

Willner, Boldridge et al., Fukui and Cherry do not show keyboard openings accept the keys and expose the multi-bit binary code stored therein to the circuit matrix wherein the keys are spring loaded with arms with feet that hold the keys in position which arms are flexible to enable removal of each of the keys and the binary code therein from keyboard independently of the keys in desired keyboard location without disturbing other keys.

Taylor teaches keyboard openings accept the keys and expose the multi-bit binary code stored therein to the circuit matrix wherein the keys are spring loaded with arms with feet that hold the keys in position which arms are flexible to enable removal of each of the keys and the binary code therein from keyboard independently of the keys in desired keyboard location without disturbing other keys (See Fig. 1, 5, items 5, 82, 96, 38-39, Col. 2, Lines 29-41).

It would have been obvious to one of ordinary skill in the art at the time of invention to use Taylor approach in the Willner, Boldridge et al., Fukui and Cherry apparatus in order to provide an improved keyboard system with high code flexibility (See Col. 1, Lines 9-10 in the Taylor reference).

6. Claims 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Willner in view of Boldridge et al., Fukui and Taylor.

Willner teaches data entry device (See Fig. 1D, Item 100, Col. 6, Lines 57-66) for disabled comprising: a keyboard having a plurality key positions (See Figs. 1B and 1C, items 234, 236, 238, 240, 242, Col. 8, Lines 57-60).

Willner does not show a set of movable keys, each key of the set containing a character or function and containing a multi-bit binary code therein identifying the character or function of

the particular key, keys being responsive to user contact to the keycaps, keys being capable of being positioned in any one of the key positions in the keyboard; a circuit matrix disposed below and in a fixed relationship to keyboard keyboard, circuit matrix being capable detecting the binary code when one of the keys is contacted to produce an electrical signal representative of the binary code associated with the contacted key; a standard interface connector to connect the keyboard to a computer; a controller for converting the output of the circuit matrix for the contacted key to one which is recognizable by the computer so that the output of the keyboard provides to the standard interface connector correctly, identifies the contacted keys character or function to the computer irrespectively of the position of the key on the keyboard in accordance with users disability.

Boldridge et al. teaches a plurality of keys each key representing a character or function and containing a multi-bit binary code therein identifying the character or function, keys being responsive to user contact to the keycaps (See Fig. 1,7, items 30-33, in description See Col. 7, Lines 62-68); a circuit matrix disposed below and in fixed relationship to keyboard, circuit matrix having detection positions for each of plurality of keys which detection positions are each capable of detecting the binary code of the keys is contacted to produce an electrical signal representative of the binary code associated with the contacted key (See Fig. 1,7, items 30-33, in description See Col. 7, Lines 62-68 and Fig. 9, item 41, in description See from Col. 9, Line 60 to Col. 10, Line 2); a controller for converting the output of the circuit matrix for any contacted key to one which is recognizable by a computer as the code for the character or function represented by keyboard irrespective of the position of the contacted key on the keyboard (See Fig. 9A, item 41, Col. 9, lines 60-68); a standard interface connector to connect the keyboard to

a computer (See Fig. 9B, item SERIAL DATA OUT, in description See from Col. 9, Line 60 to Col. 10, Line 2); a controller for converting the output of the circuit matrix for the contacted key to one which is recognizable by the computer so that the output of the keyboard provides to the standard interface connector correctly, identifies the contacted keys character or function to the computer irrespectively of the position of the key on the keyboard so the key can be moved to configure the keys on the keyboard in accordance with user disability (See Fig. 1,7, items 30-33, in description See Col. 7, Lines 62-68 and Fig. 9, item 41, in description See from Col. 9, Line 60 to Col. 10, Line 2).

It would have been obvious to one of ordinary skill in the art at the time of invention to implement plurality of keys as shown by Boldridge et al. in the Willner apparatus in order to obtain an improved keyboard assembly (See Col. 1, Lines 9-10 in Boldridge et al. reference).

Willner and Boldridge et al. do not show each key containing an inscription on the keycap representing a character or function and keys being capable of being positioned in any of the key positions in the keyboard.

Fukui teaches to change each key top (See Drawing 1, item 1) and to generate key code correspondent to any position in the keyboard (See Drawing 1, item 1).

It would have been obvious to one of ordinary skill in the art at the time of invention to change an inscription on the keycap and position a key to any key location as shown by Fukui in the Boldridge et al. apparatus in order to obtain a desired keyboard system (See Abstract in the Fukui reference).

Willner, Boldridge et al., Fukui do not show keyboard openings in a top surface of the keyboard, each key being capable of being positioned through the opening.

Taylor teaches keyboard openings in a top surface of the keyboard, each key being capable of being positioned through the opening (See Fig. 1, 5, items 5, 82, 96, 38-39, Col. 2, Lines 29-41).

It would have been obvious to one of ordinary skill in the art at the time of invention to use Taylor approach in the Willner, Boldridge et al., Fukui apparatus in order to provide an improved keyboard system with high code flexibility (See Col. 1, Lines 9-10 in the Taylor reference).

Response to Amendment

7. Applicant's arguments filed on 01-30-04 with respect to claims 1-6, 8-20 have been considered but are moot in view of the new ground(s) of rejection.

Telephone inquire

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 703-305-5661. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703-305-4938. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ls

VIJAY SHANKAR
PRIMARY EXAMINER